

18. Fly Investigations Reports.—II. Trials for Catching, Repelling, and Exterminating Flies in Houses, made during the year 1915 for the Zoological Society of London. By WINIFRED H. SAUNDERS*.

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The trials were made at a country residence in Kent during August and September. House-flies were particularly numerous in the kitchen quarters and in an outhouse where poultry-food was prepared and stored. The living-rooms of the house were practically free from flies.

An inspection was made to ascertain whether any breeding-grounds existed on the premises. It was found that farmyard manure dumped into a manure-tip produced a large number of flies, though it was clear that the main source was beyond the control of the householder. Pigs were kept on this manure, which was allowed to accumulate for six weeks before being moved and stacked on some land a few yards away.

No steps had been taken to check the increase of flies, and the situation offered scope for testing under normal conditions the remedies which from experimental investigations were most promising.

Measures were taken :

1. To check the breeding of flies by treating the farmyard manure:—

- (a) In the manure-tip by watering the surface every four days with Westoran, in the strength of one part to twenty parts of water.
- (b) Stacked for use in the garden by dressing the surface with green oil and soil, in the proportion of one part oil to forty parts of soil per 100 square feet of surface.

2. To destroy flies by poisoning and by attracting to traps.

TRIAL I.—TRAPPING.

Balloon traps baited with (1) casein, sugar, and stout ;
 (2) " " banana ;
 (3) " " water

gave the following results:—

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TABLE 1.—Mapweb Bait (casein and sugar in equal parts) and stout. Moistened daily with stout.

<i>Day.</i>	<i>Kitchen.</i>	<i>Servants' Hall.</i>	<i>Poultry Shed.</i>	<i>Total.</i>
1st to 3rd	4 Musca.	6 Musca.	12 Musca.	22 Musca.
4th	20 „ 3 Blow.	8 „	18 „	46 „ 3 Blow.
5th	42 „	32 „	23 „	97 „
6th	34 „	52 „	2 „	88 „
7th	20 „	31 „	9 „	60 „
9th	11 „	25 „	13 „	49 „
Total	131 Musca, 3 Blow.	154 Musca.	77 Musca.	362 Musca, 3 Blow.

TABLE 2.—Mapweb Bait and banana.

<i>Day.</i>	<i>Kitchen.</i>	<i>Servants' Hall.</i>	<i>Poultry Shed.</i>	<i>Total.</i>
1st to 3rd	1 Musca, 6 Fannia, 1 Blow.	7 Musca.	39 Musca.	47 Musca, 6 Fannia, 1 Blow.
4th	2 Musca.	12 „	10 „	24 Musca.
5th	3 „	22 „	13 „	38 „
6th	6 „	22 „	10 „	38 „
7th	24 „	11 „	10 „	45 „
9th	8 „	1 „	3 „	12 „
Total	44 Musca, 6 Fannia, 1 Blow.	75 Musca.	85 Musca.	204 Musca, 6 Fannia, 1 Blow.

TABLE 3.—Mapweb Bait and water. Mixed two days previously; moistened daily with water.

<i>Day.</i>	<i>Kitchen.</i>	<i>Servants' Hall.</i>	<i>Poultry Shed.</i>	<i>Total.</i>
1st	2 Musca.	—	2 Musca.	4 Musca.
2nd	5 „	13 Musca.	18 „	36 „
3rd	13 „	47 „	1 „	61 „
4th	31 „	14 „	27 „	72 „
6th	22 „	16 „	2 „	40 „
Total	73 Musca.	80 Musca.	50 Musca.	213 Musca.

TRIAL II.—FLYPAPER (EXTIRMO).

Tested against Trial I. with the following results :—

Examined after two days :

TABLE 4.

1. Kitchen.....	52	Musca against 41 in 3 balloon traps ...	Bait and stout ...	11
			Bait and banana...	8
			Bait and water ...	22
2. Servants' Hall ...	135	Musca against 42 in 3 balloon traps ...	Bait and stout ...	25
			Bait and banana...	1
			Bait and water ...	16
3. Poultry Shed ...	314	Musca against 18 in 3 balloon traps ...	Bait and stout ...	13
			Bait and banana...	3
			Bait and water ...	2

N.B.—Of the House-flies caught in traps 69 % were males.

TRIAL III.—SPRAYS.

Rooms were sprayed with the following (the windows were netted for two days, then fly-papers were exposed) :—

1. Flybane (aromatic disinfecting oil).
2. Exol.
3. Army Spray.

TABLE 5.

Flybane.

Day after netting was removed :—

<i>Kitchen.</i>	<i>Servants' Hall.</i>	<i>Poultry Shed.</i>
102 Musca.	105 Musca, eggs laid.	40 Musca.

Exol.

Two days after netting was removed :—

<i>Kitchen.</i>	<i>Servants' Hall.</i>	<i>Poultry Shed.</i>
130 Musca.	250 Musca.	—

Army Spray.

This preparation was arrived at late in the season (November), when, under normal conditions, flies had disappeared. It was, therefore, tested in some Army recreation-rooms, in a building where flies were bred for experimental purposes. The conditions were similar to those of ordinary cook-houses and dwelling-

rooms, food being served there which provided the usual attractions.

(N.B.—The Army Spray is prepared from Professor Maxwell Lefroy's formula by Heppell & Co., Knightsbridge, who supply it at 30s. per gallon concentrated. The diluted spray for use costs 1s. 6d. per gallon.)

TRIAL IV.—FLYKILLER.

Flykiller (treacle, arsenic, and water) was tested according to recommendations by Berlese, who used it with great success in Italy. Rags saturated with the solution were hung in places out of reach of domestic animals, and the mixture was sprayed on the roof, etc. Two applications were made, and the surrounding areas were carefully examined for dead flies the day after each. None were found, and there was no decrease in the number of flies which entered the house.

CONCLUSIONS.

From Trial III. :—

1. Flybane is effective in killing flies by contact, but it does not act as a repellent. There are two objections to its use in kitchens, wards, and dwelling-rooms. First, the paraffin oil taints food (although it is absolutely harmless); and, secondly, it leaves a mark upon the window-panes, furniture, etc.

2. Exol is effective in bringing the flies down—that is, it paralyses them sufficiently to sweep them up within half an hour, but about 50% finally recover.

It was found that all recoveries were made within 20 hours.

3. The Army Spray successfully kills flies by contact. Those which fall never recover, although they may struggle for some hours. It is not a deterrent.

Flies returned to the room sprayed with Flybane on the following day and in two days after Exol. They continued to be abundant after the manure treatments were made.

The fact that flies reappeared after the treatment of all farm-yard manure decided that they were being bred on neighbouring premises.

As regards poisoning, Flykiller proved a complete failure under the particular conditions that it was tested, probably due to a difference in climate.

Fly-papers were very successful, and in comparing figures they give better results than the traps.

Of traps the common balloon is the one which is recommended. It should be baited with casein and sugar in equal parts (Mapweb Bait), moistened with beer, stout, or banana. To keep rooms free from flies the most practicable procedure would be to spray daily with the new Army Spray (absolutely harmless to food and having a pleasant scent), and to set traps or fly-papers as explained above.